WE CLAIM:

1. A system for feeding a low vapor pressure reactant to a reaction chamber, comprising:

a storage container at a first temperature T1, the storage container containing an amount of liquid reactant;

a vaporization chamber positioned in a hot zone at a second temperature T2, higher than T1, the vaporization chamber connected with the storage container through a liquid reactant feed line and configured to be partially filled with liquid reactant and to collect vaporized reactant above a surface of the liquid reactant in an upper part of the vaporization chamber; and

a reaction chamber positioned in a hot zone at a third temperature T3, wherein T3 is higher than T1, the reaction chamber being connected to the vaporization chamber through a vaporized reactant feed conduit.

2. The system of Claim 1, further comprising a drain at one end connected to a bottom part of the vaporization chamber to drain residual reactant after use.

3. The system of Claim 2, wherein the drain comprises the liquid reactant feed line in communication with a pump and the storage container.

4. The system of Claim 2, wherein the drain comprises a drain conduit communicating at one end with the vaporization chamber and at the other end with a drain container to collect drained reactant.

5. The system of Claim 4, further comprising a liquid mass flow measuring device in the drain conduit.

6. The system of Claim 1, wherein T3 is higher than or equal to T2.

7. The system of Claim 1, wherein the hot zone of the vaporization chamber and the hot zone of the reaction chamber are in intimate contact.

8. The system of Claim 1, wherein the hot zone of the vaporization chamber and the hot zone of the reaction chamber are in free thermal communication with each other and thermally insulated from the storage container.

9. The system of Claim 1, wherein the hot zone of the vaporization chamber is part of the hot zone of the reaction chamber.

10. The system of Claim 1, wherein vaporized reactant is directed from the vaporization chamber to the reaction chamber through an inert gas valving system.

11. The system of Claim 1, further comprising a liquid flow control device in the liquid reactant feed conduit.

12. A method for providing vapor phase reactant from solid or liquid source, comprising:

supplying a liquid comprising a precursor from a storage container to a vaporization chamber, the vaporization chamber being at a higher temperature than the storage container;

vaporizing the precursor in the vaporization chamber;

transporting the vaporized precursor to a reaction chamber;

conducting a vapor deposition process using the vaporized precursor in the reaction chamber; and

draining unvaporized liquid from the vaporization chamber after conducting the vapor deposition process without opening the vaporization chamber.

13. The method of Claim 12, wherein the liquid is the precursor.

14. The method of Claim 13, wherein vaporizing comprises maintaining an unvaporized liquid in the vaporization chamber and generating vaporized precursor above the unvaporized liquid.

15. The method of Claim 12, wherein the liquid comprises a solid reactant source dissolved in a solvent.

16. The method of Claim 15, wherein vaporizing the precursor comprises vaporizing the solvent and vaporizing the solid reactant source.

17. The method of Claim 16, wherein draining comprises providing solvent to the vaporization chamber to dissolve remaining solid reactant source and draining a resultant solution.

18. The method of Claim 12, wherein draining comprises returning the unvaporized liquid to the storage container.

19. The method of Claim 18, wherein draining further comprises employing a pump.

20. The method of 12, wherein draining comprises removing the unvaporized liquid to a dedicated drain container.

21. The method of Claim 12, wherein the storage container is kept at a temperature at which the precursor is stable.

22. The method of Claim 21, wherein the vaporization chamber is kept at a vaporization temperature below the boiling point of the precursor.

23. The method of Claim 22, wherein transporting comprises flowing the vaporized precursor along conduits maintained at or above the vaporization temperature.

24. The method of Claim 22, wherein the vaporization chamber is maintained within a first hot zone in intimate contact with a second hot zone accommodating the reaction chamber.

25. The method of Claim 24, wherein the first hot zone and the second hot zone share at least some insulating elements.

26. The method of Claim 22, wherein the vaporization chamber and the reaction chamber are maintained within a single hot zone.

27. The method of Claim 22, wherein transporting comprises supplying pulses of the vaporized precursor to the reaction chamber alternatingly with pulses of at least one other precursor.

28. The method of Claim 27, wherein transporting comprises alternatingly stopping and allowing flow of the vaporized precursor from the vaporization chamber to the reaction chamber with an inert gas diffusion barrier.

29. The method of Claim 28, wherein alternatingly stopping and allowing flow with an inert gas diffusion barrier comprises controlling valves for an inert gas flow outside of a hot zone accommodating the vaporization chamber.

30. The method of Claim 12, wherein the vapor deposition comprises atomic layer deposition.

31. The method of Claim 12, wherein draining is conducted at regular intervals between a predetermined number of depositions.

32. The method of Claim 12, wherein draining is conducted regularly between deposition runs after a predetermined period of time.

33. The method of Claim 12, further comprising periodically refilling the vaporization chamber with liquid from the storage container.

34. The method of Claim 33, wherein periodically refilling comprises sensing a surface level of unvaporized liquid in the vaporization chamber has fallen below a predetermined level.